

# RESEARCH NOTES

Rocky Mountain Forest and Range Experiment Station

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## RATE OF SPREAD OF DWARFMISTLETOE IN PONDEROSA PINE IN THE SOUTHWEST

by

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The accompanying diagram is based on measurements on the rate of spread of dwarf-mistletoe (Arceuthobium vaginatum f. cryptopodum) on ponderosa pine in 36 plots in Arizona and New Mexico.

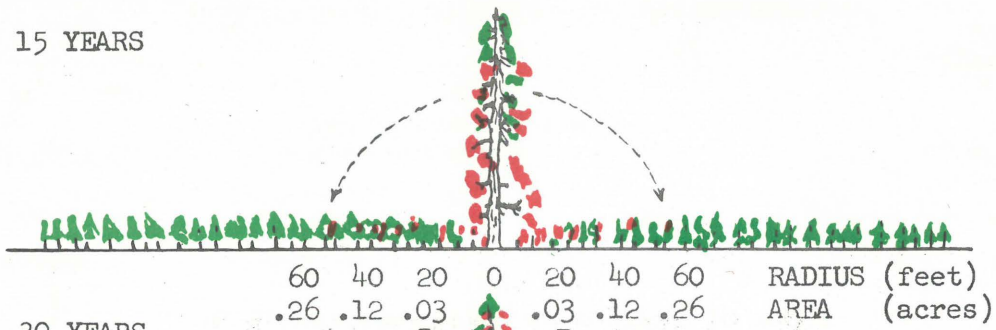
The first infections in the young stand are entirely from seeds ejected from dwarf-mistletoe plants in the old tree. This is represented in the figure by the curved, dashed lines. The importance of the original tree as a direct source of infection declines with time. Lateral spread, or infection from seeds produced in the understory, begins after 20 to 30 years. This is represented by the horizontal dashed lines. At points beyond the limits of seed discharge from the source tree, or when the source tree dies, all spread is lateral.

The mean spread from overstory trees into dense (closed-canopied) stands 41 years of age was 51 feet (1.2 feet per year); for open-canopied stands 34 years of age the spread was 59 feet (1.7 feet per year). There was no relationship between compass direction and distance from the seed source. This suggests that prevailing winds are not important in the dissemination of this species.

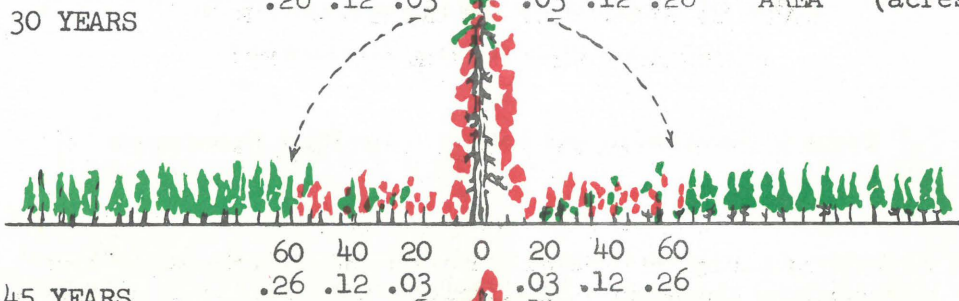
The approximate area of infection centers in open and dense stands of various ages is shown in the following tabulation:

<u>Age of stand</u>	<u>Dense stands</u>	<u>Open stands</u>
(Years)	(Acres infected)	
15	0.10	0.10
30	.13	.21
45	.21	.38
75	.47	.90
90	.66	1.25

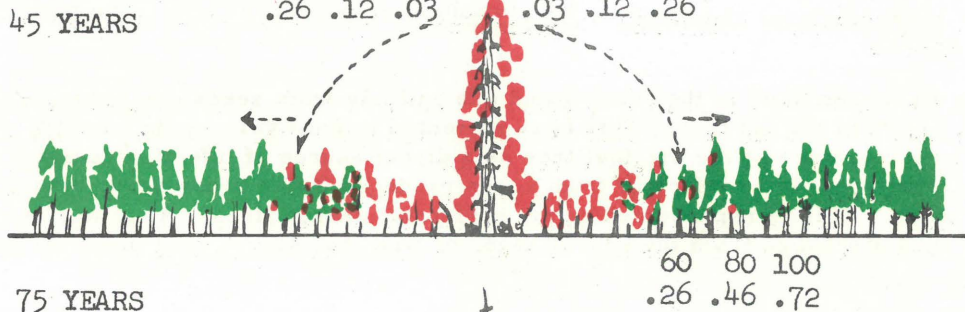
15 YEARS



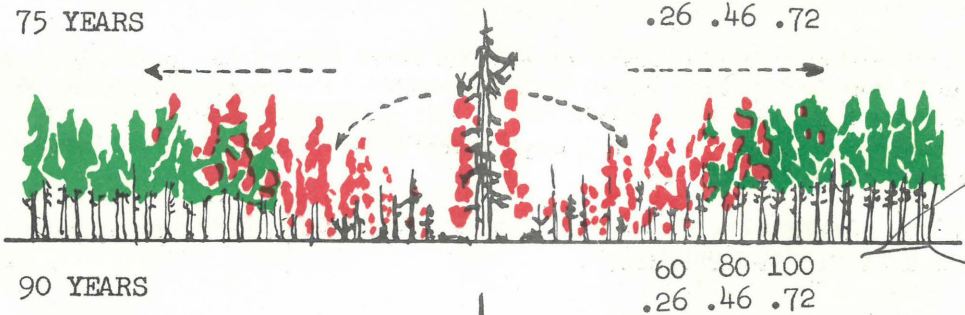
30 YEARS



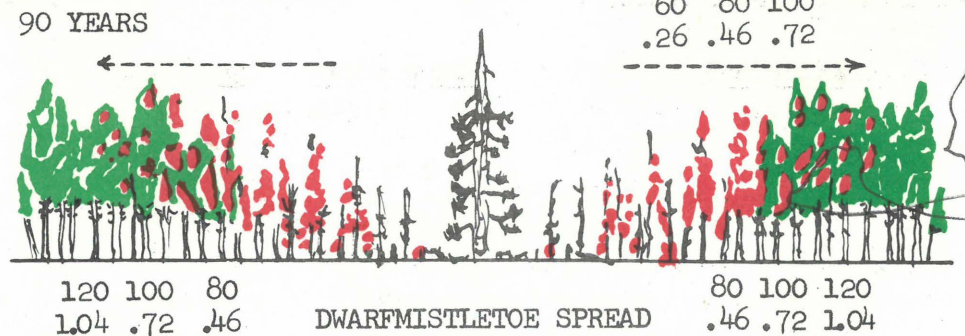
45 YEARS



75 YEARS



90 YEARS



DWARFMISTLETOE SPREAD  
 PONDEROSA PINE

Healthy Crown

Infected Crown